

Effect of Trapped Energetic Particles on the Resistive Wall Mode

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A stability analysis for the resistive wall mode is studied in the presence of trapped energetic particles (EPs). When the EPs' beta exceeds a critical value, a fishbonelike bursting mode (FLM) with an external kink eigenstructure can exist. This offers the first analytic interpretation of the experimental observations [*Phys. Rev. Lett.* **103**, 045001 (2009)]. The mode-particle resonances for the FLM and the $q = 1$ fishbone occur in different regimes of the precession frequency of EPs. In certain ranges of the plasma rotation speed and the EPs' beta, a mode conversion can occur between the resistive wall mode and FLM.